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OF  
POISONING RESULTING FROM CHLORO-  
FORM TAKEN INTERNALLY  
*RECOVERY*

SUPPLEMENTED WITH A TABLE OF REPORTED CASES

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LLEWELLYN ELIOT, M.D.

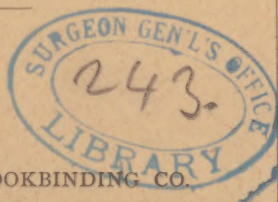
ATTENDING PHYSICIAN TO ST. ANN'S INFANT ASYLUM, CENTRAL DISPENSARY  
EMERGENCY HOSPITAL, ETC., WASHINGTON, D. C.

*Reprinted from* THE MEDICAL RECORD, July 11, 1885

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201-213 EAST TWELFTH STREET

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REPORTS of cases of poisoning following the internal administration of chloroform are scattered through the literature of medicine. To collect these various reports and to show their treatment is the object of this paper. When summoned to the case which is recorded below, I was struck with the absence of information regarding treatment in text-books upon *materia medica*, therapeutics, and toxicology. The table accompanying is the result of an investigation into this subject, extending through two years: it shows upon its face the picture of each case, but for the use of those who may desire to extend this investigation beyond its present limits, as well as for the purposes of general information, the record of each case is appended in abstract.

Glancing at our table we find death resulted in 16 cases; of this number but 6 died in twenty-four hours, the other 10 surviving varying periods until the eighth day. A fatal issue results from the intensity of the oesophageal, tracheal, and gastric symptoms. One case (No. 15) should properly be excluded from consideration, as it is surrounded by such an element of doubt; this would give a mortality of 15 in 56 cases, or 26.78 per cent.

Chloroformum, methenyl chloride, terchloride of formyl, according to Wood, was discovered by Mr. Samuel Guthrie, of Sackett's Harbor, N. Y., in 1831. It results from the action of bleaching powder (chloride of lime) upon methyl or ethyl alcohols, or of chlorine upon marsh gas. It is a heavy, colorless fluid, practically uninflam-



mable, but will burn with a greenish flame ; its smell is powerful and agreeable ; taste hot, sweetish, and aromatic ; solvent powers extensive ; specific gravity 1.525 at zero and boils at 62° C. (143.6° F.) ; insoluble in water, soluble in alcohol and ether ; unaffected by concentrated sulphuric acid. There are two officinal forms—chloroformum venale and chloroformum purificatum.

Chloroform is introduced into the system through the lungs, the stomach, and the skin. Whether its action depends upon an altered condition of the blood or upon its direct action upon the nerves is not certain ; it is more than probable that both theories are correct—upon the blood by increasing its carbon and rendering it thicker, and upon the nerves by its paralyzing effect. That it acts upon the blood by destroying its red disks in the body is proven by the appearance of icterus following its administration either by inhalation or by the mouth (L. Hermann : *Archiv für Anatomie, Physiologie, etc.*, 1866).

Chloroform from its quickness of action and smallness of dose is superior for surgical and obstetrical purposes to any other anæsthetic, although it has an increased amount of danger over ether, nitrous oxide, and bromide of ethyl. Its mortality is 1 to 5,860, that of ether 1 to 16,542, that of nitrous oxide 1 to 100,000. It is not an agent to be used indiscriminately nor in the absence of proper antidotes.

Deaths are rather due to paralysis of the heart and respiratory organs. When administered internally the symptoms produced are of the same character only more intensified and more lasting than those following inhalation. A stage of transient excitement, most marked in athletes and drunkards, muscular relaxation, abolition of sensibility and consciousness, profound narcosis, stertorous breathing and abolition of reflex actions are the essential symptoms following the administration of this drug either by inhalation or by the mouth. Although rarely prescribed internally it is sometimes useful in neuralgia, colica pictonum, delirium tremens, renal calculi, ague, and to relieve the pain and vomiting of cancer of

the stomach. Chloroform is administered under but three conditions, namely : first, by surgeons for surgical purposes ; second, by medical men and others to induce sleep, obtain relief from pain, or for suicidal purposes, and third, for its intoxicating effects. A few cases have occurred where it has been taken by mistake for some other fluid. I have never seen its successful administration to sleeping subjects, although I have experimented upon them.

It is impossible to state with exactness the amount of chloroform that can be administered by inhalation ; the concentration of the vapor and the length of time during which it is used are to be considered. In a successful case of puerperal eclampsia where I assisted there was one pound and a half administered during thirty-six hours. The same holds good in regard to the fatal dose taken by the mouth. Recorded cases show quantities varying from half a drachm to six ounces. The indications of the administration of a fatal dose, in addition to general muscular relaxation, perfect anæsthesia, and insensibility, are cyanosis, convulsions, jaundice, sudden paleness of the face and lips, stoppage of the pulse and respiration, involuntary passage of urine and fæces. In treating cases of narcosis following internal administration, the first indications are to evacuate the stomach by an emetic, or preferably by the stomach-pump. The stomach may be washed out and the restorative remedies introduced. Fresh air, sinapisms, flagellations, cold douche, strong coffee, with ammonia, strychnia, digitalin, or morphia sulphate hypodermically administered are the measures to be adopted ; at the same time artificial respiration, lowering the head to the general level of the body, drawing the tongue forward, lifting the chin, application of hot irons to the skin, and the inhalations of nitrite of amyl should be employed. Electricity is advocated upon theoretical grounds. Recently subcutaneous injections of apomorphia have been suggested by Dr. Reuss (Case 41) ; the employment of this powerful emetic would no doubt hasten recovery if used in time, but few physicians have it always at hand.

The employment of ammonia as a stimulant, in preference to alcohol, is based upon theoretical considerations, alcohol increasing the already increased amount of carbon in the blood, while ammonia acts merely as a powerful stimulant. This view was brought forward by Spence.<sup>1</sup>

The post-mortem<sup>1</sup> appearances are not pathognomonic. The gastro intestinal tract is reddened, ecchymosed, and shows other signs of severe and intense inflammation.

The dose generally prescribed for internal administration is from fifteen drops to one drachm in mucilage, glycerine, or sweetened water.

On Sunday, January 14, 1883, about four o'clock in the evening, I was summoned to see General B——, sixty years of age, who had swallowed chloroform. Upon my arrival at the house, ten minutes after, his wife informed me that he had taken the bottle containing six ounces of Squibb's chloroform and swallowed two ounces. She had given him mustard-water and "a few drops of water of ammonia." He was lying upon the bed in an apparently exhausted condition, with sunken eyes, anxious expression, dilated pupils, coldness of the extremities, a weak pulse of 70, intense burning in throat, stomach, and over the abdomen, sighing respiration, and great inclination to sleep. He was given pulv. ipecac, zinc sulph., āā 1 gramme, to be repeated; soon violent nausea and retching set in, and the stomach was emptied of a yellowish fluid, smelling strongly of chloroform; this vomiting was repeated twice, when the fluid was streaked with blood. To combat the drowsy condition very strong coffee was given him; to allay the burning sensation plenty of sweet oil. In about two hours he was sufficiently recovered to be left with his attendants, leaving instructions to continue a systematic series of pulling and calling and administration of strong coffee. I promised to call at 8.30 the same evening, when his only discom-

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<sup>1</sup> In the abstracts all post-mortem appearances not connected with the result of chloroform-poisoning are omitted.



fort was the excessive burning about the mouth and throat. The free use of sweet oil afforded relief. On the next morning he appeared very well, was ordered a gargle of chlorate of potash and slop diet. In a week he was entirely recovered.<sup>1</sup>

CASE 1.—Adult male, aged twenty-two, took four ounces. Seen in three hours. Appeared as if intoxicated; skin below normal; pupils dilated and insensible to light; respiration tranquil; pulse 65 and small. Stomach was washed out with tepid water; then with brandy-and-water; then one ~~gramme~~ <sup>drachm</sup> of compound spirits of ammonia introduced. Vomiting followed; became profoundly comatose; breathing stertorous and puffing; skin cold; pulse imperceptible; general convulsions. Placed in blankets and surrounded by warm water in tins; sinapisms to chest and large blister to nape of neck. Became sensible thirteen hours after taking the chloroform; on the fourth day he was discharged entirely cured. He stated that he lost sensibility from the time he drank the chloroform.

CASE 2.—F. D. M.—, aged thirty-one, took thirty grammes thirty drops. Heat and burning of air-passages, œsophagus, and stomach; in ten minutes was delirious; pupils neither dilated nor contracted, mobile; respiration unembarrassed. Given sweetened water and a few drops of aqua ammonia, without effect. Recovery. This occurred in a case of treatment of colica pictonum.

CASE 3.—Wm. W.—, aged twenty-seven, on December 6, 1851, took two mouthfuls. Seen in six hours. Breathing stertorous and heavy; pupils dilated; pulse 60, full and soft; total insensibility; face livid; lips almost black. Stomach washed out with warm water and mustard; turpentine over chest and abdomen, also by enema. Improvement. Death in thirty-six hours. Post-mortem examination showed congestion of mucous surface of pharynx and of the brain.

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<sup>1</sup> For assistance in collecting the cases from the German medical journals I am greatly indebted to Drs. Behrend and Kolopinski, of this city.

CASE 4.—Male child, aged four, took from one to two drachms. Seen in thirty-five minutes. Insensibility; pupils contracted; breathing laborious; pulse quick and full; face pale; extremities cold; afterward pupils became alternately dilated and contracted; face livid and pale; pulse quick and full, then imperceptible; breathing stertorous. Treatment: Sulphate of zinc; stomach-pump; sinapisms; ammonia to nostrils; leeches; artificial respiration; then warm bath. Died in three hours. No post-mortem examination.

CASE 5.—Mr. H—— was ordered for delirium tremens the following: *R.* Chloroform, 3 v.; pulv. glycyrrhiza, 3 j.; mist. camph.,  $\frac{3}{4}$  ixss. *M.* Sig.: One ounce dose. He took the whole at one dose. No bad effects followed; was jaundiced. Recovered. No notes in detail.

CASE 6.—Female, aged twenty-one, on May 19, 1856, took two ounces. Seen in twenty minutes. Symptoms resembled opium poisoning; perfectly unconscious; pupils contracted; temperature normal; respiration tranquil and regular; pulse 78, soft and tolerably full. Treatment: Stomach-pump; sinapisms; aromatic spirits of ammonia with brandy. Respiration continued to decrease until it fell to two in the minute, and finally ceased for nearly two minutes. Galvanism; stimulating enemata every half hour. May 25th was able to sit up, and the following day returned to work.

CASE 7.—Adult male, who took six ounces in the Royal Infirmary, Edinburgh, some years ago. He recovered from the immediate effects, but died in forty-eight hours of acute gastritis. Stimuli and galvanism were used. This case is related from memory, and the name of the medical attendant is not given.

CASE 8.—H. P——, male, adult, on August 12, 1856, took three and a half ounces. Seen in a few minutes. Immediate symptoms of intoxication; vomiting violently and in a state of wild excitement; insensibility; hiccough; pulse frequent, weak, and jerking. Pupils varied, sometimes dilated at others contracted; breathing became slightly stertorous. Treatment: Stomach-pump; galvan-

ism ; cold affusions ; shaking. Recovery from poisoning in nine hours. Slight gastritis followed.

CASE 9.—C. C——, aged twenty-three, took four to five drachms. Seen in two hours. He immediately experienced burning in the throat, fauces, and epigastrium ; in half an hour he vomited ; breathing became slower ; pupils contracted and then dilated to such an extent that scarcely any iris could be seen, and so remained until his recovery ; surface became cold ; pulse imperceptible ; jaws firmly clenched ; respiration but faintly perceived ; blood and mucus exuded from mouth and nostrils. Treatment : Cold affusions, artificial respiration, and enema of turpentine. Recovered entirely in a few hours with no bad results except slight subacute gastritis.

CASE 10.—Mary McN——, aged thirty-five, took an ounce and a half. Seen in twenty minutes. Insensible ; stertorous breathing ; pulse slow and feeble ; pupils contracted. Treatment : Mustard sinapism ; dry cups ; frictions ; stomach-pump, and brandy. Gastritis followed and she died in twenty hours. Autopsy showed softening of the mucous membrane of the stomach to such an extent that it could be scraped off in shreds.

CASE 11.—Harry T——, Company F, Second Cavalry, took two ounces. Seen in ten or fifteen minutes. Had vomited ; insensible ; breathing stertorous ; pulse about 60 ; respiration became very slow and feeble ; pulse reduced to 40, scarcely discernible and intermittent ; face purple. Treatment : Stomach washed out with a pint and a half of warm water. Spt. ammon. aromat., ℥ ij., introduced before tube was withdrawn. Cold douche ; stimulating enema ; sinapisms. Sensibility returned in seven hours. Slight gastritis and jaundice followed. He was returned to duty.

CASE 12.—Female adult, aged twenty-two, on March 24, 1857, took nearly one ounce. Seen in five minutes. Total insensibility ; pupils dilated ; pulse full and oppressed, foam at the mouth. Treatment : Fresh air, brandy and water, stomach pump, ammonia to nostrils, cold water dashed in the face. March 27th was up, walking about pulse regular and equal. Subject was an epileptic.

CASE 13.—Female adult took on October 27, 1858, a wineglassful. Seen four and a half hours afterward. Pupils slightly contracted; pulse 84, moderately full; breathing abdominal, without stertor; total insensibility; respiration stopped for thirty seconds. Treatment: Stomach-pump and sinapisms. Gastritis followed and she died on the eighth day after taking the poison. Post-mortem examination showed congestion and ulceration of the stomach.

CASE 14.—Julia W.—, aged eighteen, took one ounce. Seen in twenty minutes. Fell to the floor; burning pain in stomach; pulse feeble and quick; countenance pallid; extremities cold; became gradually comatose; breathing stertorous; pupils contracted and insensible to light. Refused to take medicine. Treatment:  $\frac{5}{8}$  j. powdered ipecac was forced down her throat, vomiting followed. Mustard to extremities, cold water dashed on face, and flagellations at short intervals. In three hours she was entirely recovered. Case of attempted suicide.

CASE 15.—Adult male, aged twenty-eight, was found in a semi-comatose condition. Had attempted to disembowel himself; had shot himself in each side of the chest, and stated that he had taken one-fourth pound of chloroform. Taken to hospital. No smell of nor any symptoms of chloroform poisoning. Was seen in two hours. Death.

[This case is abstracted from a newspaper report, contains no physician's name, and is of very doubtful authenticity.—L. E.]

CASE 16.—Mr. P. M.—, aged thirty-five, between 12.15 P.M. and 7.15 A.M. (in seven hours) took about an ounce and a half. When seen pulse full, though slow; respiration hurried and audible; pupils highly dilated and gave no evidence of sensibility. Treatment: Fresh air, ice bladders to head, cold effusions along the spine, and a common enema; electricity; warm jars to feet; lavement, with the addition of twelve to fifteen drops of caustic ammonia was given and retained. There was partial return of sensibility. Death occurred at a quarter to twelve, midnight, twenty three and a half



hours after taking the first dose. Post-mortem examination showed congestion of brain, lungs, and stomach.

CASE 17.—Mr. —, aged fifty, on April 6, 1862, took two ounces. Seen seven hours after. Condition : Deep coma ; pupils widely dilated and insensible ; pulse slow and feeble ; body colder than natural ; movements of thorax scarcely perceptible ; sensation generally abolished. Treatment : Ammonia, sinapisms, bottles of hot water, and cold affusions, without apparent benefit ; stomach-pump tube introduced, stomach evacuated of chloroform, mucus, and watery fluid. Patient soon showed signs of returning consciousness, and in two hours was able to give rational answers. In a week he had entirely recovered from the gastritis which followed.

CASE 18.—M. A. McG—, aged twelve, on January 10, 1862, took six drachms of chloroformic anodyne. Seen in about twenty minutes (approximated time, E.). Felt sick and vomited ; was in a deep stupor in ten minutes, perfectly insensible ; pupils contracted ; face livid ; breathing stertorous, reduced to six a minute ; pulse became imperceptible at wrists. Treatment : Stomach-pump, then, three hours after, an injection into the stomach of a pint of hot coffee with three drachms of spirit of nitric ether, and repeated ; cold stream of water to the head. In fifty-four hours she was up and able to walk across the room. She suffered about ten days from bronchitis, the result of the cold water. The chief ingredients of chloroformic anodyne are : strong solution of opium, some chloroform, and a few drops of hydrocyanic acid (prussic acid odor was perceptible in the vomited liquid).

CASE 19.—An Irishman, aged seventy-two, took, on February 20, 1863, nearly an ounce (wineglassful of a liniment composed of chloroform and sweet oil). Seen in one hour. Insensible ; cold ; slow, imperceptible respiration ; pallid face ; imperceptible pulse ; pupils contracted. Treatment : Emetics ; stomach-pump ; internal stimulants, coffee and brandy ; hot bottles to feet. Recovered on second day.

CASE 20.—R. K.—, male, aged twenty-eight, on

February 16, 1864, at 2 P.M., took an ounce and a half. Body cold; breathing slow and stertorous; pulse small and fast failing; pupils dilated. Treatment: Stomach-pump. Death at nine o'clock on the 17th (in twenty-seven hours). Post-mortem examination showed: Brain and membranes much congested; lungs congested; heart natural; mucous membrane of stomach and duodenum much congested.

CASE 21.—Male, aged forty, took ten grammes. "I felt at first an acrid taste with a constriction of the wind-pipe, then quite a painful heat in the epigastric region; then followed a grinding pain in the intestines, finally a desire to have a passage, which was accompanied by a smarting and strong intestinal pains at the anus." He had taken some Seidlitz water in the morning. Treatment: Emollient and albuminous drinks, oil injections, and fresh air. Recovered.

CASE 22.—Male, adult, aged twenty-seven, on October 29, 1863, took fifty grammes. Seen in half an hour. Had vomited. Dorsal decubitus, completely immobile; skin discolored and cool; extremities cold; eyes convulsed and turned up; pupils enormously dilated; respiration stertorous; pulse, 100, very feeble and small; heart-beat short and clear, at times tumultuous. Unconscious. Respiration ceased from time to time. Treatment: Heated iron to chest, frictions to all parts of the body; titillated pharynx with feather; artificial respiration; injections of strong infusion of coffee; internally strong coffee and aqua ammonia. Some gastritis and icterus followed. Recovered.

CASE 23.—Male, aged twenty-five, took, on November 25, 1865, one ounce. Seen in two and a half hours. Complete insensibility; countenance pale; lips livid; pupils contracted; breathing stertorous; body warm; pulse at wrist scarcely to be felt; pulsations at heart heard and felt, about 120; respirations short and jerky, 20 in a minute, at times they almost ceased; unable to swallow. Treatment: Attempted to excite vomiting by feather; strong ammonia to nostrils; cold water dashed on face with no effect; stomach-pump tube introduced

induced suspension of respiration and pulse, and was abandoned; ammonia to region of heart, legs, thighs, nape of neck, and spine without good effect; injections of hot water and turpentine thrown into the rectum. There was slight improvement, but death took place twelve hours after taking. Autopsy showed congestion of lungs and cardiac vessels. (This was a case of supposed chloroform-poisoning; the amount taken was approximated. "The coroner's jury were unable to come to a decision as to the immediate cause of death."—L. E.)

CASE 24.—Mrs. D——, aged forty-five, recovering from a drunken debauch, took, with suicidal intent, from five to nine drachms. Seen in three hours. Profound coma; extremities cold; pulse about 70, and feeble. Death seemed so imminent that no efforts were made to counteract the drug. The chloroform produced sleep in a few minutes after taking it. In three hours more (six all told) she had somewhat reacted. In seven hours she had recovered consciousness. Acute gastritis set in and she died on the eighth day. Was jaundiced on the fourth day. Autopsy: Left lung collapsed and slightly adherent to pleura, right in state of gray hepatization; liver normal in size, fatty, presenting signs of commencing cirrhosis; kidneys normal in size and a little granular; œsophagus, nothing worthy of notice; stomach, fulness of blood-vessels, spot of extravasation on inner wall, nearly an inch in diameter; its mucous membrane at this point seems to be destroyed. Gastritis was the cause of death.

CASE 25.—Mr. G. H——, aged twenty-six, took two ounces. Seen in one hour, a few minutes before his death. In three minutes (estimated time) he could with difficulty be aroused from the stupor into which he was sinking; could not speak, but indicated that he had severe pain in the stomach. In five minutes he was entirely unconscious, lying still, breathing stertorously. Medical assistance arrived too late to be of service. Post-mortem examination showed congestion of lungs, œsophagus, and stomach. Mucous membrane could be pulled off with the finger-nail.

**CASE 26.**—Male, aged twenty-eight, took two ounces undiluted. Seen in two hours. Profound coma; pupils natural but insensible to light; pulse about 80, strong and full; breathing slightly stertorous. In two hours the pulse became frequent and feeble; respiration gasping and stertorous; pupils dilated; pulse became entirely absent at wrist; breathing very labored. Treatment: Sinapisms; dry heat; friction to extremities; administration per rectum of brandy and carbonate of ammonia; hot brandy and hot turpentine to the spine. Gastritis followed, but was recovered from in a week.

**CASE 27.**—Female, adult, with suicidal intent, took two ounces (approximated, L. E.). Seen in two hours. Most profound insensibility; lips and face cool and bluish; extremities still warm; breathing stertorous; pupils dilated; pulse rather full and somewhat accelerated. A physician had been called, but pronounced the case hopeless and had abandoned it. Deglutition was impossible. Drew forward the tongue, ventilated the room, dashed cold water in the face, and had the extremities rubbed with hot mustard-water, ammonia occasionally applied to the nostrils; galvanic battery; injections of warm infusion of coffee, and hot bottles to the feet. She grew worse, becoming soon entirely pulseless, extremities icy cold, conjunctiva injected, and pupils still more enlarged. Application of galvanism continued; in an hour the breathing had lost its stertor, and she opened her eyes at intervals. Injection of coffee and brandy, and external stimuli. She regained sensibility slowly; the stomach rejected brandy and coffee. Pulse could not be detected at the wrist. Hemorrhage from the bowels. Given aromatic spirits of ammonia and tincture of larch. Her bowels had moved three or four times. Death in nineteen hours. Autopsy not permitted.

**CASE 28.**—Physician, aged fifty-seven, took ninety grammes. Vomited; deep sopor came on. Was bled and cold applied to head. Dr. Fitzan arrived in three hours. The extremities were warm; there was complete anaesthesia; total paralysis; heart weak, every third beat intermittent; respiration impeded; bowels distended with gas;



pupils insensible to light and widely dilated. Stomach-pump. Pulse became regular. Owing to the paralysis, when the tongue, which had been held out, was let go, the respiration ceased. Sensibility was completely restored. Severe gastritis followed. Death in twenty-nine and a half hours. Post-mortem examination not permitted.

CASE 29.—Adult, male, aged twenty-eight, on March 27, 1871, took one ounce. Seen in half an hour. Insensibility; breathing labored and interrupted; pulse too small to count; pupils widely dilated; extremities cold; anæsthesia complete. Salt-and-water emetic, followed by vomiting. Stomach-pump, hot bottles to feet and sides, and covered with blankets; injections of ammonia into median-cephalic vein, repeated. Improved, but died in sixty hours. Autopsy: Brain congested; right lung and pleura congested; lower part of trachea congested; œsophagus congested; mucous membrane of stomach congested.

CASE 30.—Female, adult, took two ounces. Given sulphate of zinc, then aromatic spirits of ammonia. Recovery. This was related in the discussion upon the preceding case.

CASE 31.—Boy, aged thirteen, on May 25, 1871, took half an ounce. Seen in four and a half hours. Comatose; respiration sighing and laborious; pupils dilated two-thirds; pulse feeble and irregular, 100 to the minute; extremities cold; no convulsions; vomited. With stomach-pump threw in one drachm of sulphate of zinc, and repeated; given coffee and carbonate of ammonia. Recovered, and returned home next day.

CASE 32.—Mrs. H——, aged forty-five, took a tablespoonful in water for liq. ammon. acetat. Was instantly given a pint and a half of lukewarm water; vomiting followed. Complained at once of burning sensation; in eight minutes she was unconscious. Bowels and bladder evacuated involuntarily. Brandy freely given, also salad oil and yolk of egg. In the afternoon much improved, but very feeble.

CASE 33.—Male, adult, took about twelve drachms. Seen in three-quarters of an hour. Insensible; pulse 80

to 88 and feeble ; pupils widely dilated ; breath highly charged with chloroform, and respiration 40, quick and somewhat difficult. During the first four hours the pupils remained dilated, then dilated and contracted every few minutes and not affected by strong light. Pulse remained about the same throughout. The respiration was affected singularly. When the body rested on the right side with the head drooping forward and downward it would be about 40 and regular. If the body were placed on the back it would be entirely suspended. The face was livid, the lips red and dry. Cutaneous surface during first six hours was natural, during the last two covered with free perspiration. Comatose condition lasted eight hours. Treatment consisted in free ventilation, cold applications to the head, and whenever the respiration was arrested forcing the finger up under the diaphragm. After consciousness had returned symptoms of gastro-enteric inflammation were present. He recovered completely.

CASE 34.—Frau N. N——, aged fifty-eight, took thirty grammes each of sulphuric ether and chloroform. Seen immediately. Præcordial anxiety ; pulseless, senseless, and with intermittent respiration ; skin was bleached, cyanotic ; paralysis general. Had vomited. Artificial respiration ; faradization to nervous phrenicus for two hours, when this was stopped the respiration stopped ; it was continued for six hours. Sensibility returned. Was given a subcutaneous injection of strychnine. Recovery was complete.

CASE 35.—A jemidar, aged forty, on March 26, 1872, took about one ounce at 4 A.M. to poison himself. Seen at 8 A.M., four hours later. Condition : Perfectly insensible, with half-shut eyes and contracted pupils ; countenance pale ; breathing heavy and stertorous ; pulse exceedingly feeble, almost imperceptible ; all the muscles relaxed and there was no sensation. Stomach-tube introduced and about two pints of water containing twenty grains of sulphate of zinc injected. Stomach washed out several times. Brandy and ice given. In eight hours he walked away unassisted.

CASE 36.—Female, aged four, on May 28, 1872, took a teaspoonful. Seen in half an hour. Appeared as one partially intoxicated. Had been given teaspoonful of olive-oil; this was followed by draught of warm water. Vomiting soon followed; sank quickly into profound coma; pallor of features, sunken eyes, contracted pupils, insensibility of cornea; unusual muscular relaxation; complete anæsthesia; coldness of extremities; almost imperceptible pulse; short, quick, irregular, and superficial breathing. Treatment: Elevated chest, lowered head; artificial heat; small quantities of brandy. Deglutition interrupted, slow, and difficult. Artificial respiration. Consciousness returned in one hour, and in four hours **she was entirely recovered**

CASE 37.—Female, aged thirty, took three drachms. Seen in about an hour and a half. Convulsions; intense pain in the abdomen; perfectly insensible; pupils contracted to a point, corneæ insensible to the touch; universal anæsthesia; extreme pallor of face; cold hands and feet, general surface cool; pulse 78, small, very weak; respiration 16, very superficial, every fifth respiration long-drawn and full. Treatment: Emetic of warm water and salt and mustard; ice to spine; brandy internally. Recovery complete in one day. In this case the patient had taken chloroform, 3 iij.; tinct. camphor, 3 iij.; and tinct. opii, 3 jiss., in addition to 3 ij. of tinct. of opium.

CASE 38.—Tillie —, aged fifty, took half an ounce for lime-water. Seen in from fifteen to twenty minutes. Breathing labored; pulse quick and feeble, almost to indistinctness; impossible to arouse her; surface covered with cool perspiration; nothing peculiar about eyes. Treatment: Fresh air, frictions to extremities, warm milk and lime-water freely, with whiskey or brandy and ammoniated tincture of valerian. Gastritis for several days following.

CASE 39.—Woman, took nearly six drachms. Seen in half an hour. Pulse 80 and full; respiration 36 and imperfect; pupils dilated. Treatment: Enema of one ounce spirit vini gallici; three-fourths grain morphia subcutaneously. The effect was immediate and marked; patient

rallied, but depressive sinking again threatened in an hour or two, to be as promptly relieved by a repetition of the treatment. Six hours after swallowing the chloroform she gave the first sign of consciousness. Gastritis followed for three or four days.

In the discussion which followed Dr. Wilson stated that he had seen a man supposed to have taken four ounces; he appeared wild and excited, as if he had been on a spree (Report Atlanta Academy of Medicine).

CASE 40.—Adult male, aged forty-eight, took one ounce. Seen in three hours. Respiration slow and regular; pulse slow, full, and regular; stomach emptied at time of taking by vomiting. After twelve hours sensibility returned. Complete recovery. No bad effects followed.

CASE 41.—Adult female, took one ounce. Seen in a few minutes. Pulse almost gone, face livid; deglutition impossible. Treatment: Lowering the head of the bed and the use of ammonia externally with friction. Recovery with slight gastritis.

CASE 42.—T. D——, male, aged sixty, took  $\frac{7}{8}$  ss. Seen in ten minutes. In five or six minutes became insensible; respiration shallow and prolonged; pulse at wrist so feeble as to be almost imperceptible. Mustard to pit of stomach, nape of neck, and calves. Paralysis of sphincter ani, ammonia and brandy not retained. Respiration became feeble and expirations cold; artificial respiration. In about two hours after taking the chloroform he was able to sit up and take some weak brandy-and-water. No bad effects followed.

CASE 43.—C. McK——, admitted to Royal Free Hospital, October 20, 1877. Had taken one ounce and a half from 6.30 to 7.15 P.M. Seen in forty-five minutes. Unconscious; breathing irregular and occasionally stopped; pulse very intermittent; pupils dilated and fixed. Treatment: Stomach pump, artificial respiration, and galvanism; nitrite of amyl on lint without effect; enema of three drachms aromatic spirits of ammonia; brandy and milk. Died about 8.45 P.M., October 21st. Autopsy showed lungs intensely congested; stomach congested; intestines, first five feet congested, vessels of intestines



generally congested; peritoneum and omentum congested; other organs normal.

CASE 44.—German woman, aged twenty, took one ounce. Seen in five hours. Deep stupor; pulseless and fast sinking. Treatment: Electricity of no use. Nitrite of amyl inhalations same. Hypodermic of digitalin, one-tenth grain, over *scorbidis cordis*, repeated in an hour, then one-tenth grain of atropia an hour later. Recovery without gastric or oesophageal trouble.

CASE 45.—Young lady, took six drachms. Seen half an hour after. Thoroughly anæsthetized; respiration nearly normal; pulse 80. Had vomited, and vomited again on arrival of Dr. Ingalls. Respiration became inefficient and pulse failing. Inhalations of ammonia and one-twentieth grain of strychnia sulphate given hypodermically, a second one of one-fortieth grain in about three-quarters of an hour. Respiration ceased so that life was only sustained by artificial respiration. Electricity to nape of neck, the other pole to the pit of the stomach and various parts of the chest. Recovered consciousness in five hours after taking the drug. Nausea and vomiting were the only bad effects.

CASE 46.—Male, aged twenty-three, from 9 to 11 P.M. took two and a half ounces. Seen in eight to ten hours. Pale; pupils dilated and fixed; breathing slow, shallow, and at long intervals; pulse not to be felt anywhere; heart-sounds could not be heard by stethoscope; trunk warm, extremities cold. Warm brandy-and-milk injected into bowels; sinapisms, frictions, artificial respiration. Recovery from chloroform, but died on third day by hanging, from depression of spirits. Autopsy showed lungs congested.

CASE 47.—R. S.—, male, aged twenty-seven, on August 16, 1879, took three grammes. Seen in two hours. Pulse 72, full, soft, normal probably; respiration full, deep, quiet; pupils dilated; no danger apprehended. Recovery next day. August 19th, 7 A.M., jaundiced; respiration labored; pupils widely dilated; no pulse at wrists; temperature  $36.70^{\circ}$  C. in axilla. Death at 4 P.M. There is much doubt about this case. Autopsy

afforded no evidence. Dr. O'Connell does not think it was chloroform, but phosphorus.

CASE 48.—Adult female, on January 17, 1879, took fifty to sixty grammes. Seen in about four hours. Deep intoxication; artificial respiration. Respiration returned, but difficult and stertorous; pulse at radials imperceptible, at temporals and carotids thready; extremities cold and rigid; strong contraction of jaws. Titillation of pharynx, cold affusions and flagellations. Pulse became stronger. Given strong coffee and acetate of ammonia. Gastritis followed. Died (9 A.M. on 18th) in thirty-one hours. Autopsy showed ulcerations in pharynx, œsophagus, stomach, and intestines; mucous membrane of œsophagus corroded in its whole length; ulcerations of stomach small, of intestines enormous; lungs intensely congested.

CASE 49.—Female, adult, took about one ounce. Not seen for several hours. Profound narcosis; stertorous breathing; cheeks and face pallid and cold; the eyes remained open or shut as they were left; pulse 80, weak; respiration 45 per minute, and difficult. Thermometer in axilla registered  $94.70^{\circ}$  F., taken three times; in the vagina it registered  $95.2^{\circ}$  F. Treatment: Caffeine hypodermically and per orem, then hypodermics of strychnia, and whiskey with carbonate of ammonia (ammonia carbonate grs. ij. dissolved in one drachm of whiskey), followed quickly by strychnia sulphate, gr.  $\frac{1}{4}$ . Recovered.

CASE 50.—Laborer, aged sixty, took liniment of chloroform and oil, each twenty grammes, at 3 P.M. At 3.30 P.M. unconscious; stertorous respiration; cheeks, lips, and tongue highly cyanosed; whole body in viscid perspiration; pulse 72, moderately full and rhythmic; pupils highly contracted; cervical veins distended. No reflex excitability; vomited once. Stomach-pump brought away chloroform-smelling yellow fluid; stomach washed out. Pulse dicrotic; respiration labored; conjunctivæ insensible. Tongue drawn out, respiration became easier; ammonia to nostrils; cold frictions; black coffee introduced into stomach by

pump ; involuntary evacuation of the bowels ; vinegar enema. 5 P.M. : Spontaneous cough. In removing mucus from mouth, brought out tobacco-quit not observed before. 5.15 P.M. : Semi-conscious. Twenty-four hours afterward chloroform-smell from contents of stomach drawn through pump.

CASE 51.—Frenchman, took three ounces. Seen in an hour and a half. Respiration had ceased ; pulse twenty per minute and hardly felt at wrist ; surface cold and of dusky pallor ; lips livid ; pupils widely dilated. Treatment : Artificial respiration ; magneto-electric machine ; enemata of beef-tea and brandy ; subcutaneous injections of ether over heart. Inhalations and subcutaneous injections of nitrite of amyl gave but temporary relief. Recovered.

CASE 52.—Adult female (about a tablespoonful) half ounce. Severe convulsions ; burning pain in stomach. Morphia sulphate, gr.  $\frac{1}{4}$  hypodermically. Only sequelæ were burning of mouth and throat.

CASE 53.—Adult female, took half ounce of toothache-drops composed of equal parts of chloroform and laudanum. Only bad result burning of throat and mouth.

CASE 54.—Adult female (old) took one drachm. In five minutes had convulsions. Hypodermic of morphia sulphate.

CASE 55.—Louise R——, aged six, in December, 1883, took two drachms Squibb's chloroform undiluted. Seen soon after. Respiratory efforts very feeble ; heart-beats scarcely perceptible ; conjunctivæ not responsive ; teeth clenched ; limbs fell listlessly where placed ; cold and nearly pulseless. Had been given emetic of sulphate of zinc ; vomited. Artificial respiration and electricity over phrenic nerve ; after improvement, cracked ice, stimulants and keeping patient awake were the measures employed. Recovery complete in a few hours. [In a communication from Dr. McArdle, he states he saw this patient in about half an hour.—L. E.]

CASE 56.—“The patient was a female, twenty-one years of age, who had swallowed two ounces of pure chloroform. She was found within twenty minutes after-

ward in a deep stupor ; the pupils contracted ; respiration regular ; pulse 70, soft and full ; the face not congested. External irritants were applied ; the stomach-pump used, and brandy and ammonia given. The respiration then became slow and stertorous, the pulse fell, and the face became livid. Galvanic shocks were employed and continued for two hours, with stimulating enemata, and heat to the limbs. The respiration fell to two in a minute ; the pulse at the wrist was almost imperceptible. The remedies were persevered in, and reaction gradually took place. In five or six hours . . . consciousness returned. On the following day there was thirst, nausea, pain in the abdomen and lumbar region, and frequent and bloody stools. In about a week recovery was complete."

[Note : This case is extracted from Stillé's "Therapeutics and Materia Medica," vol. i., p. 194, ed. 1860, as the volume of the "Annuaire de Thérap." is not on file at the Library of the Surgeon-General's office. I think it corresponds to Case No. 6 by Spence.

June 7, 1885.







*Table of Reported Cases of Poisoning by the Internal Administration of Chloroform.*

No.	Reference.	Reporter.	Sex.	Quantity taken.	Time elapsed before seen.	Pulse.	Respiration.	Pupils.	Result.	Remarks.
1	Lond. Med. Gaz., vol. xii., p. 675, 1851.	A. S. Taylor, M.D., F.R. S.	Male, 22 yrs.	3 iv.	3 hours.	65, small, became imperceptible.	Tranquil, afterward became stertorous and puffing.	Dilated, insensible to light.	Recovery complete in 4 days.	
2	Bull. Gen. de Thérap., etc., Paris, vol. xlii., p. 296, 1852.	Dr. F. A. Aran.	Male, 31 yrs.	30 gms. 30 gtt.	10 minutes.	Between 72 and 80.	Without uneasiness.	Neither dilated nor contracted.		This case occurred during the course of treatment of "colica pictonum."
3	Monthly Jour. Med. Sc., Lond. & Edin., vol. xiv., p. 77, 1852.	E. R. Bickersteth, Esq.	Male, 27 yrs.	Two mouthfuls.	6 hours.	60, full and soft.	Stertorous and heavy.	Dilated.	Died in 36 hours.	Autopsy.
4	Ass'n Med. Jour., Lond., vol. i., p. 354, 1854.	F. H. Hartshorne, Esq.	Male, 4 yrs.	3 j. to 3 ij.	35 minutes.	Quick and full, then imperceptible.	Laborious, then stertorous.	Contracted, then varied.	Died in 3 hours.	No autopsy.
5	Dublin Hosp. Gazette, vol. i., Nov. 15, 1854.	Dominic Corrigan.	Male, adult.	3 v.					Recovery.	In a case of "delirium tremens," no bad effects.
6	Lond. Lancet, vol. ii., p. 159, 1856.	J. Spence, Esq., F.R.C.S.E.	Female, 21 yrs.	3 ij.	20 minutes.	78, soft and tolerably full.	Regular and tranquil, but continued to decrease until it fell to two a minute, and finally ceased for nearly two minutes.	Contracted.	Recovery complete in 7 days.	
7	Lond. Lancet, vol. ii., p. 159, 1856.	J. Spence, Esq., F.R.C.S.E.	Male, adult.	3 vj.					Died in 48 hours of acute gastritis.	Occurred at the Royal Infirmary, Edinburgh, cited from memory.
8	Ass'n Med. Jour., Lond., vol. ii., p. 733, 1856.	T. Holmes, Esq.	Male, adult.	3 iijss.	Few minutes.	Frequent, weak and jerking.	Became slightly stertorous.	Varied.	Recovery, with slight gastritis following.	
9	Virg. M. and S. J., Richmond, vol. vii., p. 369, 1856.	— Frick, M.D.	Male, 23 yrs.	3 iv. to 3 v.	2 hours.	Imperceptible.	Became slower until faintly perceived.	Contracted, then very widely dilated.	Recovery in a few hours, gastritis following.	
10	Med. Exam., Phila., vol. xii., p. 659, 1856.	Junius Williams.	Female, 35 yrs.	3 jss.	20 minutes.	Slow and feeble.	Stertorous.	Contracted.	Died in 20 hours.	
11	Am. Jour. Med. Sc., Phila., vol. xxxiv., p. 367, 1857.	C. H. Smith, A.S., U.S.A.	Male, adult.	3 ij.	10 to 15 minutes.	About 60, became reduced to 40, and scarcely discernible and intermittent.	Stertorous, became slow and feeble.		Recovery, with slight gastritis and jaundice.	
12	Med. Times and Gazette, Lond., p. 615, 1857.	H. D. Dean, M.R.C.S.L., S.A.	Female, 22 yrs.	Nearly 3 j.	5 minutes.	Full and oppressed.		Dilated.	Recovery in 3 days.	
13	Lond. Lancet, vol. i., p. 400, 1859.	W. P. Bain, M.D.	Female, adult.	Wine-glassful.	4½ hours.	84, moderately full.	Abdominal, without stertor, stopped for thirty seconds.	Slightly contracted.	Died on eighth day of acute gastritis.	Autopsy.
14	Am. Med. Times, N. Y., vol. ii., p. 153, 1861.	T. C. Finnell, M.D.	Female, 18 yrs.	3 j.	20 minutes.	Feeble and quick.	Stertorous.	Contracted and insensible to light.	Recovery in 3 hours.	
15	Bl. f. gerichtl. Anthropol. Nurnberg, Bd. xii., p. 317, 1861.		Male, 28 yrs.	¼ lb.	2 hours.				Death.	This case is very doubtful.
16	Med. Times and Gazette, Lond., vol. i., p. 478, 1862.	Alex. Lamm, M.D.	Male, 35 yrs.	3 jss.	7 hours.	Full though slow.	Hurried and audible.	Highly dilated, and insensible.	Death in 23½ hours.	Autopsy.
17	Med. Times and Gazette, Lond., vol. i., p. 577, 1862.	H. M. D. S., M.D.	Male, 50 yrs.	3 ij.	7 hours.	Slow and feeble.	Movements of thorax scarcely perceptible.	Widely dilated, and insensible.	Recovery complete in a week, gastritis following.	
18	Lond. Lancet, vol. ii., p. 7, 1863.	George Harley, M.D.	Female, 12 yrs.	3 vj.	About 20 minutes.	Became imperceptible at wrists.	Stertorous, reduced to six in a minute.	Contracted.	Recovery complete in 10 days.	Chloroformic anodyne.
19	Med. Times and Gazette, Lond., vol. ii., p. 378, 1863.	W. B. Woodman, M.D.	Male, 72 yrs.	Nearly 3 j.	1 hour.	Imperceptible.	Slow, imperceptible.	Contracted.	Recovery in 2 days.	Liniment of chloroform and olive oil.
20	Australian M. J., Melbourne, vol. ix., p. 108, 1864.	F. Dowling.	Male, 28 yrs.	3 jss.		Small, fast, and failing.	Slow and stertorous.	Dilated.	Death in 27 hours.	Autopsy.
21	L'Union Médicale, Paris, vol. xxxii., p. 155, 1864.	Dr. Martineau.	Male, 40 yrs.	10 gms.					Recovery.	
22	Gaz. Méd. de Strasbourg, p. 168, 1864.	Dr. Macker.	Male, 27 yrs.	50 gms.	¼ to ¾ hours.	100, very feeble and small.	Stertorous, stopped at times.	Enormously dilated.	Recovery.	
23	Med. Times and Gazette, Lond., vol. i., p. 34, 1866.	Edward Bradford.	Male, 25 yrs.	3 j.	2½ hours.	At wrist scarcely to be felt; heart, pulsations about 120.	Stertorous, short and jerky, 20 in a minute, at times they almost ceased.	Contracted.	Death in 12 hours.	Autopsy.
24	Med. Record, N. Y., vol. ii., p. 54, 1867.	O. D. Pomeroy, M.D.	Female, 45 yrs.	3 v. to 3 ix.	3 hours.	About 70, and feeble.			Death on eighth day of acute gastritis.	Autopsy.
25	Leavenworth Med. Herald, vol. i., p. 49, 1867.	D. W. Stormont, M.D.	Male, 26 yrs.	3 ij.	About 1 hour.		Stertorous.		Died in 1 hour.	Autopsy.
26	West J. M., Indianapolis, vol. ii., p. 720, 1867.	J. E. Tefft, M.D.	Male, 28 yrs.	3 ij.	2 hours.	80, strong and full, became more frequent and feeble, and finally absent.	Stertorous and labored.	Natural, became dilated.	Recovery complete in a week.	
27	Pacific M. and S. J., San Fran., vol. ii., p. 499, 1868.	I. R. Prevost, M.D.	Female, adult.	3 ij.	2 hours.	Rather full and accelerated, soon became pulseless.	Stertorous.	Dilated.	Died in 19 hours.	



*Table of Cases of Poisoning by the Internal Administration of Chloroform (Continued).*

No.	Reference.	Reporter.	Sex.	Quantity taken.	Time elapsed before seen.	Pulse.	Respiration.	Pupils.	Result.	Remarks.
28	Deutsche klin. Berl., Bd. xxi., p. 196, 1869.	E. Fitzan.	Male, 57 yrs.	90 gms.	3 hours.	Small and intermittent, became regular.	Impeded.	Widely dilated, insensible to light.	Death in 29½ hours.	
29	Australian M. J., Melbourne, vol. xvi., p. 108, 1871.	J. E. Neild, M.D.	Male, 28 yrs.	3 j.	¾ hour.	Too small to count.	Labored and interrupted.	Widely dilated.	Death in 60 hours.	Antopsy.
30	Australian M. J., Melbourne, vol. xvi., p. 108, 1871.	— Blair, M.D.	Female, adult.	3 ij.	.....	.....	.....	.....	Recovery.	Related in discussion of No. 29, Med. Soc. Vict'a. (case of 1865)
31	Australian M. J., Melbourne, vol. xvi., p. 210, 1871.	W. C. Rees, M.B., M.R.C.S.E.	Male, 13 yrs.	3 ss.	4½ hours.	100, feeble and irregular.	Sighing and laborious.	Dilated ¾	Recovery complete next day.	
32	Phila. Med. Times, vol. i., p. 277, 1871.	A. Fricke, M.D.	Female, 45 yrs.	Tablespoonful.	Immediately.	.....	.....	.....	Recovery.	
33	Med. and Surg. Rep., Phila., vol. xxiv., p. 495, 1871.	S. M. Snyder, M.D.	Male, adult.	About 3 xij.	¾ hour.	80 to 88, feeble.	40, quick and somewhat difficult.	Dilated, then varied.	Recovery, with gastro-enteric symptoms following.	
34	Deutsche klin. Berl., Bd. xxiii., p. 415, 1871.	H. Böttger.	Female, 58 yrs.	30 gms.	Immediately.	Pulseless.	Intermittent.	.....	Recovery.	Ether and chloroform, each 30 gms.
35	Indian Med. Gazette, Calcutta, vol. vii., p. 182, 1872.	Banerjee, Sub. Asst. Surg.	Male, 40 yrs.	About 3 j.	4 hours.	Exceedingly feeble, and almost imperceptible.	Heavy and stertorous.	Contracted.	Recovery in 8 hours.	
36	Am. Jour. Med. Sc., Phila., vol. lxiv., p. 430, 1872.	S. C. Busey, M.D.	Female, 4 yrs.	Teaspoonful.	¾ hour.	Almost imperceptible.	Short, quick, irregular, and superficial.	Contracted.	Recovery complete in 4 hours.	
37	Am. Jour. Med. Sc., Phila., vol. lxiv., p. 431, 1872.	S. C. Busey, M.D.	Female, 30 yrs.	3 ij.	1½ hour.	78, small and very weak.	16, very superficial, every fifth long drawn and full.	Contracted to a point, and insensible to touch.	Recovery complete next day.	
38	Med. Arch., St. Louis, vol. viii., p. 79, 1872.	J. C. Whitehill, M.D.	Female, 50 yrs.	3 ss.	15 to 20 minutes.	Quick, feeble, and almost indistinct.	Labored.	Nothing peculiar.	Recovery.	
39	Atlanta M. and S. Jour., vol. x., p. 236, 1872.	J. T. Johnson, M.D.	Female, adult.	Nearly 3 vj.	¾ hour.	80, full.	36, imperfect.	Dilated.	Recovery in 3 or 4 days with slight gastritis.	
40	Arch. f. klin. Med., Leipg., Bd. x., p. 309, 1872.	Dr. Degen.	Male, 48 yrs.	3 j.	3 hours.	Slow, full, regular.	Slow and regular.	.....	Recovery.	
41	Lond. Lancet, vol. i., p. 113, 1874.	B. M. Webster, M.D.	Female, adult.	3 j.	Few minutes.	Almost gone.	.....	.....	Recovery with slight gastritis.	
42	Canada Lancet, Toronto, vol. vi., p. 209, 1874.	H. J. Saunders, M.D., M.R.C.S.	Male, 60 yrs.	3 ss.	10 minutes.	Almost imperceptible.	Shallow and prolonged, became feeble and expirations cold.	.....	Recovery in 1 day.	
43	Med. Times and Gazette, Lond., vol. i., p. 36, 1878.	Hamilton and Bateman,	Male, adult.	3 jss.	45 minutes.	Very intermittent.	Irregular, occasionally stopped.	Dilated and fixed.	Died in 26½ hours.	Autopsy.
44	Louisville Med. News, vol. vi., p. 15, 1878.	J. A. Larrabee, M.D.	Female, 20 yrs.	3 j.	5 hours.	Pulseless.	.....	.....	Recovery.	
45	Chicago M. J. and Exam., vol. xxxvi., p. 398, 1878.	E. F. Ingalls, M.D.	Female, adult.	3 vj.	¾ hour.	80, and failing.	Nearly normal, became inefficient, and ceased, so that life was only sustained by artificial respiration.	.....	Recovery.	
46	Brit. M. J., Lond., vol. ii., p. 94, 1879.	Barclay and Macrae.	Male, 23 yrs.	3 ijss.	8 to 10 hours.	Not to be felt anywhere.	Slow, shallow, and at long intervals.	Dilated and fixed.	Recovery.	Hanged himself on the third day, from depression of spirits. See addenda 47.
47	Chicago M. J. and Exam., vol. xxxix., p. 379, 1879.	P. O'Connell, M.D.	Male, 27 yrs.	3 ij.	2 hours.	72, full and soft.	Full, deep, and quick.	Dilated.	Recovery next day.	
48	Jour. de Thérap., Paris, vol. vii., p. 140, 1880.	Dr. Reuss.	Female, adult.	50 to 60 gms.	3 to 4 hours.	Imperceptible at radial, thready at temporal and carotid; became stronger.	Difficult and stertorous.	.....	Death in 31 hours.	Autopsy.
49	South. M. Rec., Atlanta, vol. x., p. 398, 1880.	W. P. Nicholson, M.D.	Female, adult.	3 j.	Several hours.	80, weak.	Stertorous and difficult; 45 in a minute.	.....	Recovery.	Temperature in axilla, 94.7° F.; vagina, 95.2° F. Chloroform and olive oil, equal parts.
50	Aerzt Bericht des k. k. Allegem. Krankenhaus zu Prag, for 1880, p. 41.	Eisel's Med. Clinic (Thomayer).	Male, 60 yrs.	20 gms.	¾ hour.	72, moderately full and rhythmic, became dicrotic.	Stertorous, became labored.	Highly contracted, and insensible.	Recovery.	
51	Brit. M. J., Lond., vol. i., p. 775, 1882.	James Oliver.	Male, adult.	3 ij.	1½ hour.	20, hardly felt at wrist.	Had ceased.	Widely dilated.	Recovery.	
52	St. Louis Cour. Med., vol. x., p. 228, 1883.	J. Friedman, M.D.	Female, adult.	Tablespoonful.	.....	.....	.....	.....	Recovery.	
53	St. Louis Cour. Med., vol. x., p. 228, 1883.	J. Friedman, M.D.	Female, adult.	3 ij.	.....	.....	.....	.....	Recovery.	Equal parts of laudanum and chloroform.
54	St. Louis Cour. Med., vol. x., p. 229, 1883.	J. Friedman, M.D.	Female, adult.	3 j.	.....	.....	.....	.....	Recovery.	
55	Arch. Pediatrics, vol. i., p. 108, 1884.	T. E. McArdle, M.D.	Female, 6 yrs.	3 ij.	Soon after.	Nearly pulseless.	Very feeble.	.....	Recovery complete in a few hours.	
56	Annuaire de Thérap. vol. xviii., 1855.	.....	Female, 21 yrs.	3 j.	20 minutes.	70, soft and full, became almost imperceptible.	Regular, became slow and stertorous, and fell to two a minute.	Contracted.	Recovery in about a week.	See addenda 56.
57	MEDICAL RECORD, N. Y., vol. xxviii., p. 29, 1885.	L. Eliot, M.D.	Male, 60 yrs.	3 ji.	10 minutes.	70, weak.	Sighing respiration.	Dilated.	Recovery.	





